



**The Smarter Balanced Technology Strategy Framework and
Testing Device Requirements**

EXECUTIVE SUMMARY



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This report presents a framework for collective technology planning among the Smarter Balanced Assessment Consortium member states. The plan emphasizes the critical need for technology to support student learning with the Smarter Balanced Assessment System minimum requirements as context and milestones. Key data was acquired and reviewed from a variety of sources including the Technology Readiness Tool and related survey information, state stakeholder discussions, Smarter Balanced advisory meetings and related research, and district interviews from across the Consortium.

Key Findings:

1. States implementing online, computer-adaptive assessments similar to the proposed Smarter Balanced Assessment System have done so effectively while adhering to tight budgetary provisions and implementation timelines.
2. Districts and educators within states that have made the transition to online, computer-adaptive tests find considerable value in the increased amount and specificity of performance data available, the expediency in which the data is accessible, and the cost-savings associated with online distribution and management of the assessment and the related data.
3. Much of the existing hardware devices currently deployed across school sites will effectively support the Smarter Balanced Assessment System; however, districts must focus on ensuring ample bandwidth provisions to support larger populations of students participating in testing through strategic scheduling and rotations throughout administration windows.

This report, as commissioned by the Smarter Balanced Assessment Consortium, provides minimum recommended hardware specifications and basic bandwidth calculations required to successfully administer the Smarter Balanced assessment solution. Districts are urged to review the following tables along with the full document, as well as reference the Smarter Balanced website (<http://www.smarterbalanced.org>) regularly for up-to-date information. Taken together, these materials, and the approaches contained within them, will help all districts strategically prepare for a full and successful implementation of the Smarter Balanced assessment.



Hardware and Software Requirements Overview

Operating System	Minimum Smarter Balanced Requirements for Current Computers ¹²³	Recommended Smarter Balanced Minimum for New Purchases
Windows	Windows XP (service pack 3) Pentium 233 MHz processor 128 MB RAM 52 MB hard drive free space	Windows 7 to Windows 8.1 1GHz processor 1GB RAM 80 GB hard drive or at least 1GB of hard drive space available
Mac OS X	Mac OS X 10.4.4 Macintosh computer with Intel x86 or PowerPC G3 (300 MHz) processor, 256 MB RAM, 200 MB hard drive free space	Mac OS X 10.7 to OS X 10.9 1 GHz processor 1GB RAM 80 GB hard drive or at least 1GB of hard drive space available
Linux	Linux (Ubuntu 9-10, Fedora 6) Pentium II or AMD K6-III 233 MHz processor 64 MB RAM 52 MB hard drive free space	Linux (Ubuntu 11.10, Fedora 16) 1 GHz processor 1GB RAM 80 GB hard drive or at least 1GB of hard drive space available
iOS	iPads 2 running iOS6	iPads 3+ running iOS6
Android	Please see http://www.smarterbalanced.org for the current set of approved secure browsers and the devices for which they are approved.	Please see http://www.smarterbalanced.org for the current set of approved secure browsers and the devices for which they are approved.
Chrome OS	Chromebooks running Chrome OS (v31–v34)	Chromebooks running Chrome OS (v31–v34)

Minimum Computer Requirements

Minimum requirements represent a low compliance threshold. Districts should attempt to exceed these requirements as many machines operating at these levels could struggle with sufficient on-board memory and processing to run secure browsers as well as other simultaneous running programs accumulated on the device over time.

¹ The minimum Smarter Balanced requirements are generally equivalent to the minimum requirements of the associated eligible operating system. Users should refer to the minimum requirements of the operating system as a means of resolving any ambiguities in the minimum Smarter Balanced requirements.

² These guidelines do not supersede the minimum requirements of the operating systems.

³ All hardware choices should consider the individual needs of students. Some students may need hardware that exceeds these minimum guidelines, and some students may require qualitatively different hardware. Tablets may require the use of a mouse.

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Additional Requirements Applicable Across Operating Systems:

Device Requirements	Minimum Smarter Balanced Requirements for Current Computers
Screen Size	10" class or larger with 1024 x 768 display resolution
Headphones/earphones	Available to students for use during the English language arts test and for students who require text-to-speech features on the mathematics test
Security	The device must have the administrative tools and capabilities to temporarily disable features, functionalities, and applications that could present a security risk during test administration.
Keyboards	<p>External keyboards are required in all cases unless specified differently by a student's Individualized Education Program (IEP) or 504 plan. Any form of external keyboard that disables the on-screen virtual keyboard is acceptable. This includes mechanical, manual, plug and play, and wireless-based (e.g., Bluetooth, RF, IR) keyboards. The intent of this specification is to ensure the required display area is available to allow students to read multiple sources of complex item text and respond to source evidence for analytical purposes.</p> <p>While wireless keyboards are permissible, districts should be aware that high-density deployments of wireless keyboards and mice might interfere with each other or with the wireless network. Therefore, they should test the room configuration before the examination date and consider wired alternatives.</p>
Pointing Device	A pointing device must be included. This may consist of a mouse, touch screen, touchpad, or other pointing device with which the student is familiar.
Form Factors	No restriction as long as the device meets the other stated requirements. These forms include desktops, laptops, netbooks, virtual desktops and thin clients ⁴ , tablets (iPad, Windows, Chromebooks, and Android), and hybrid laptop/tablets.
Network	Must connect to the Internet with a minimum of 20 Kbps available per student to be tested simultaneously. Local Web proxy caching servers are not recommended.

Minimum Requirements for Other Devices

Minimum requirements represent a low compliance threshold. Ultimately, districts should attempt to exceed these requirements as many machines operating at these levels could struggle with sufficient on-board memory and processing to run secure browsers as well as other simultaneous running programs accumulated on the device over time.

⁴ The resources (e.g., memory and processors) available to each client need to be equivalent or greater to the requirements for standalone hardware.



Operating System (OS)	OS Release Date	Anticipated Smarter Balanced End-of-Support Date
Mac OS 10.4.4	January 2006	End of 2014-2015 School Year
Mac OS 10.5 (Power PC)	October 2007	End of 2014-2015 School Year
Mac OS 10.5 (Intel)	October 2007	End of 2016-2017 School Year
Mac OS 10.6	August 2009	End of 2018-2019 School Year
Mac OS 10.7	July 2011	End of 2020-2021 School Year
Mac OS 10.8	October 2007	End of 2021-2022 School Year
Mac OS 10.9	TBD	TBD
Windows XP (SP 3)	October 2008	End of 2015-2016 School Year
Windows Vista	January 2007	End of 2016-2017 School Year
Windows 7	October 2009	End of 2019-2020 School Year
Windows 8	October 2007	End of 2021-2022 School Year
Windows Server 2003	April 2003	End of 2015-2016 School Year
Windows Server 2008	October 2009	End of 2018-2019 School Year
Linux (Fedora Core 6 (K12LTSP 4.2+))	November 2007	End of 2016-2017 School Year
Linux Ubuntu 9-12	October 2009	End of 2018-2019 School Year
iOS 6	June 2012	TBD
iOS 7	September 2013	TBD
Chrome OS	Rolling Release	TBD

See <http://www.smarterbalanced.org> for the current table of anticipated end-of-support dates.

(For Mac OS 10.4.4, 10.5, and Windows XP) The Smarter Balanced Anticipated End-of-Support Date is after the end-of-support date from the manufacturer of the operating system. Smarter Balanced highly recommends upgrading to current versions of these operating systems prior to the Smarter Balanced Anticipated End-of-Support Date.

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Additionally, Smarter Balanced anticipates projected dates by which various operating systems will be deemed insufficient support for the Smarter Balanced Assessment System. The table on the previous page shows anticipated Smarter Balanced end of support dates for various operating systems in use across districts.

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Please refer to the full Smarter Balanced Technology Strategy Framework and Testing Device Requirements document on the Smarter Balanced website for a comprehensive reporting of all related information.

<http://www.smarterbalanced.org>

